CLAIMS

1. A ceramic body, characterized in that at least a portion of the ceramic particles contains at least Si, Al, and Mg and has a needle-shaped morphology.

2. A ceramic body, characterized in that at least a portion of the surface of the ceramic body is coated with ceramic particles that contain at least Si, Al, and Mg and have a needle-shaped morphology.

3. A ceramic body in which at least a portion of the ceramic particles contains at least Si, Al, and Mg and has a needle-shaped morphology, characterized in that at least one selected from pores and elements capable of directly supporting a catalyst component is present on the surface of the ceramic particles.

4. A ceramic body in which at least a portion of the surface of the ceramic body is coated with ceramic particles that contain at least Si, Al, and Mg and have a needle-shaped morphology, characterized in that at least one selected from pores and elements capable of directly supporting a catalyst component is present on the surface of the ceramic particles.

5. The ceramic body according to claim 3 or 4, wherein the pores comprise at least one selected from defects in the crystal lattice of the ceramic particles, microcracks at the surface of the ceramic particles, and a deficiency of an element that constitutes the ceramic particles.

6. The ceramic body according to claim 5, wherein the microcracks have a width not greater than 100 nm.

7. The ceramic body according to claim 5, wherein the pores have a diameter or width that is not more than 1000 times the diameter of the catalyst ion to be supported and the pore number thereof is at least 1×10^{11} per liter.

8. The ceramic body according to claim 5, wherein the pores comprise defects formed by the replacement of a portion of a constituent element of the ceramic particles with a metal element that has a different valence.

9. The ceramic body according to claim 8, wherein the defects comprise at least one selected from oxygen defects and lattice defects and the ceramic body contains at least 4×10^{-6}% ceramic crystals having at least one defect in the unit crystal lattice of the needle-shaped particles.

10. The ceramic body according to claim 3 or 4, characterized in that at least one element or more constituting the needle-shaped particles of the ceramic body is substituted by an element other than a constituent element and the ceramic body is capable of directly supporting a catalyst component via the substitute element.

11. The ceramic body according to claim 10, wherein the catalyst component is supported on the substitute element by chemical bonding.

12. The ceramic body according to claim 10, wherein the substitute element is at least one element or more that has a d or f orbital in electron orbitals thereof.

13. The ceramic body according to any of claims 1 to 4, wherein the needle-shaped particles contain Si, Al, and Mg and at least one species from among at least Sr and Ce.

14. The ceramic body according to any of claims 1 to 4, wherein the needle-shaped particles are cordierite.

15. The ceramic body according to claim 14, wherein at least five unit crystal lattice units from the surface of the needle-shaped particles are cordierite.

16. The ceramic body according to any of claims 1 to 4, wherein the aspect ratio of the needle-shaped particles is at least 5.

17. The ceramic body according to any of claims 1 to 4, wherein the ceramic body takes the form of particles, pellets, a nonwoven fabric, or a honeycomb.

18. The ceramic body according to any of claims 1 to 4, wherein the specific surface area of the ceramic body is at least 1 m^2/g.

19. The ceramic body according to claim 17, comprising a ceramic honeycomb with a porosity of at least 10%.

20. The ceramic body according to claim 17, wherein the porosity of the ceramic body is at least 30%.

21. The ceramic body according to claim 17, comprising a ceramic honeycomb that has a coefficient of thermal expansion in the flow channel direction of not more than $2 \times 10^{-6}/°C$.

22. The ceramic body according to claim 17, comprising a ceramic honeycomb that has a coefficient of thermal expansion in the flow channel direction of not more than $1 \times 10^{-6}/°C$.

23. The ceramic body according to claim 17, comprising a ceramic honeycomb that has a crush strength in the flow channel direction of at least 5 MPa.

24. The ceramic body according to claim 17, comprising a ceramic honeycomb that has a crush strength in the flow channel direction of at least 10 MPa.

25. The ceramic body according to claim 17, comprising a ceramic honeycomb that has a cell wall thickness of not more than 400 μm.

26. The ceramic body according to claim 17, comprising a ceramic honeycomb that has a cell wall thickness of not more than 100 μm.

27. The ceramic body according to claim 17, comprising a ceramic honeycomb that has a narrow pore distribution width.

28. The ceramic body according to claim 27, wherein at least 50% of the pore volume is encompassed by the distribution width within ± 1/2 of the value of the average pore diameter.

29. A ceramic catalyst body characterized in that the ceramic body according to any of claims 1 to 28 which supports a catalyst component.

30. The ceramic catalyst body according to claim 29, wherein the catalyst component is a noble metal.

31. The ceramic catalyst body according to claim 30, wherein the amount of supported catalyst component is at least 0.1 g per liter.

32. A ceramic catalyst body characterized in that the ceramic body according to any of claims 1 to 28 and/or the ceramic catalyst body according to any of claims 29 to 31 which contain a co-catalyst component.

33. The ceramic catalyst body according to claim 32, wherein the co-catalyst component is at least one selected from lanthanoid elements, transition metal elements, alkali metal elements, alkaline-earth metal elements, or their oxides and compound oxides.

34. The ceramic catalyst body according to claim 33, wherein the co-catalyst component content is at least 6 g per liter.

35. A method of producing a ceramic body that has needle-shaped particles, characterized by:

producing a ceramic body in which at least a portion of the ceramic particles contains at least Si, Al, and Mg and has a needle-shaped morphology, using a starting material comprising a compound of SiO_2 and Al_2O_3 as an Si source.

36. The method of producing a ceramic body that has needle-shaped particles according to claim 35, wherein an acicularization additive is added.

37. The method of producing a ceramic body that has needle-shaped particles according to claim 36, wherein the acicularization additive is at least one selected from the lanthanoid elements, transition metal elements, alkali metal elements, and alkaline-earth metal elements.

38. The method of producing a ceramic body that has needle-shaped particles according to claim 35, wherein the appearance of needle-shaped particles is induced by an acid treatment, an alkali treatment, or dry etching.

39. The method of producing a ceramic body that has needle-shaped particles according to claim 38, wherein the acid treatment that induces the appearance of needle-shaped particles is a treatment with a weak acid.

40. The method of producing a ceramic body that has needle-shaped particles according to claim 39, wherein the weak acid is a weak acid with a normality of 0.001 to 2.

41. The method of producing a ceramic body that has needle-shaped particles according to claim 39 or 40, wherein the weak acid is at least one acid selected from acids containing a carboxy group (-COOH), phosphoric acid, and hydrogen sulfide.

42. The method of producing a ceramic body that has needle-shaped particles according to claim 35, wherein the

appearance of needle-shaped particles is induced by molding a composition containing needle-shaped particles into a desired shape and firing the composition.

43. The method of producing a ceramic body that has needle-shaped particles according to claim 35, wherein the appearance of needle-shaped particles is induced by molding a starting material for forming needle-shaped particles into a desired shape and firing the starting material.

44. A method of producing a ceramic catalyst body, characterized by:

supporting a catalyst component on a ceramic body according to any of claims 1 to 28.

45. A method of producing a ceramic catalyst body, characterized by:

supporting a co-catalyst component on a ceramic body according to any of claims 1 to 28 and/or on a ceramic catalyst body according to any of claims 29 to 31.

46. The method of producing a ceramic catalyst body according to claim 45, wherein the co-catalyst component is mixed into the ceramic starting material for a ceramic body according to any of claims 1 to 28 and/or a ceramic catalyst body according to any of claims 29 to 31.